Application No. 10/558,385
Amendment dated November 4, 2008
After Final Office Action of September 4, 2008

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AMENDMENTS TO THE CLAIMS

1. (Canceled)

2. (Previously Presented)   An electronic device test apparatus for testing DUTs by pushing their input/output terminals against contact units of a test head, comprising:

a moving device configured to pick up and move the DUTs;

a first imaging device configured to capture an image of a front surface of the DUT on which the input/output terminals are led out before being picked up by the moving device;

a second imaging device configured to capture an image of a back surface of the DUT on which the input/output terminals are not led out after being picked up by the moving device; and

a calculating device configured to calculate the position and posture of the outside shape of the front surface of the DUT before being picked up by the moving device and the position and posture of the input/output terminals of the DUT before being picked up by the moving device from image information captured by the first imaging device, calculate the position and posture of the outside shape of the back surface of the DUT after being picked up by the moving device from image information captured by the second imaging device, and calculate the position and posture of the input/output terminals of the DUT after being picked up by the moving device based on the results of these calculations.

3. (Canceled).

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4. (Previously Presented)   An electronic device test apparatus for testing DUTs by pushing their input/output terminals against contact units of a test head, comprising:

a moving device configured to pick up and move the DUTs;

a first imaging device configured to capture an image of a front surface of the DUT on which the input/output terminals are led out before being picked up by the moving device;

a second imaging device configured to capture an image of a back surface of the DUT on which the input/output terminals are not led out after being picked up by the moving device;

a third imaging device configured to capture an image of the back surface of the DUT before being picked up by the moving device; and

a calculating device configured to calculate the position and posture of the input/output terminals of the DUT before being picked up by the moving device from the image information captured by the first imaging device, calculate the position and posture of the outside shape of the back surface of the DUT before being picked up by the moving device from the image information captured by the third imaging device, calculate the position and posture of the outside shape of the back surface of the DUT picked up by the moving device from the image information captured by the second imaging device, and calculate the position and posture of the input/output terminals of the DUT picked up by the moving device based on the results of these calculations.

5. (Previously Presented)   An electronic device test apparatus as set forth in claim 2 ~~1~~, wherein the moving device has a suction device configured to hold and pick up the DUT by suction.

6. (Previously Presented)   An electronic device test apparatus as set forth in claim 2 ~~1~~, wherein the first imaging device is provided at the moving device.

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7. (Currently Amended) An electronic device test apparatus as set forth in claim 2, ~~wherein~~ further comprising:

a test plate having substantially smooth holding surfaces for holding the back surfaces of the DUTs, wherein

the moving device places the DUTs on the holding surfaces of the test plate so as to relatively correspond to the array of the contact units, and

the input/output terminals of the DUTs electrically contact the corresponding contact units of the test head in the state with the DUTs held by the holding surfaces of the test plate in a positional relationship corresponding to the array of the contact units.

8. (Previously Presented) An electronic device test apparatus as set forth in claim 7, wherein holding surfaces of the test plate have suction device configured to hold the back surfaces of the DUTs by suction.

9.(Original) An electronic device test apparatus as set forth in claim 7, wherein the holding surfaces of the test plate hold the DUTs in the state with the input/output terminals of the DUTs directed vertically upward.

10. (Previously Presented) An electronic device test apparatus as set forth in claim 7, wherein

the test plate has holders provided in a freely movable manner and

the holding surfaces are the top surface of the holders.

11. (Original) An electronic device test apparatus as set forth in claim 10, wherein

the contact units are provided with guide parts in their vicinities and

the holders of the test plate are guided by the guide parts.

12. (Original) An electronic device test apparatus as set forth in claim 11, wherein the guide parts have at least two guide surfaces extending in mutually nonparallel directions.

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13. (Previously Presented) An electronic device test apparatus as set forth in claim 12, wherein the moving device places the DUTs on the holders of the test plate after correcting the positions and postures of the DUTs so that the distances from the side surfaces of the holders abutting against the guide surfaces to the DUTs become substantially equal to the distances from the guide surfaces in the vicinities of the contact units to the contact units.

14. (Previously Presented) An electronic device test apparatus as set forth in claim 12, further comprising pushing device configured to push the holders of the test plate so that the side surfaces of the holders abut against the guide surfaces.

15. (Previously Presented) An electronic device test apparatus as set forth in claim 14, wherein the pushing device have elastic members and are provided at the test plate.

16. (Previously Presented) An electronic device test apparatus as set forth in claim 10, further comprising a positioning plate configured to position the holders of the test plate, wherein

the moving device places the DUTs on the holders of the test plate while correcting their positions and postures in the state with the positioning plate positioning the holders of the test plate.

17. (Previously Presented) An electronic device test apparatus as set forth in claim 16, wherein

the positioning plate is formed so that the openings in which holders of the test plate can be inserted correspond to the array of contact units of the test head, and

the moving device places the DUTs at the holders of the test plate while correcting their positions and postures in the state with the side surfaces of the holders of the test plate abutting against the inside walls of the openings of the positioning plate.

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18. (Previously Presented) An electronic device test apparatus as set forth in claim 17, wherein the pushing device pushes the holders of the test plate so that the side surfaces of the holders of the test plate abut against the inside walls of the openings of the positioning plate.

19. (Currently Amended) An electronic device test apparatus as set forth in ~~claim 1~~claim 2, wherein the moving device can move the picked up DUTs in any direction and can rotate them in any direction.

20. (Canceled)

21. (Previously Presented) A method of testing DUTs pushing their input/output terminals against contact units of a test head, comprising:

capturing a first image of a front surface of a DUT on which the input/output terminals are led out before the DUT is picked up by a moving device configured to pick up and move DUTs;

capturing a second image of a back surface of a DUT on which the input/output terminals are not led out after being picked up by the moving device;

calculating the position and posture of the outside shape of the front surface of the DUT before being picked up by the moving device and the position and posture of the input/output terminals of the DUT before being picked up by the moving device from the first image;

calculating the position and posture of the outside shape of the back surface of the DUT after being picked up by the moving device from the second image; and

calculating the position and posture of the input/output terminals of the DUT after being picked up by the moving device based on the results of these calculations.

22. (Canceled)

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23.   (Currently Amended)   A method of testing DUTs pushing their input/output terminals against contact units of a test head, comprises:

capturing a first image of a front surface of a DUT on which the input/output terminals are led out before the DUT is picked up by a moving device configured to pick up and move DUTs;

capturing a second image of a back surface of a DUT on which the input/output terminals are not led out after being picked up by the moving device;

capturing a third image of the back surface of the DUT before being picked up by the moving device;

calculating the position and posture of the input/output terminals of the DUT before being picked up by the moving device from the first;

calculating the position and posture of the outside shape of the back surface of the DUT before being picked up by the moving device from the ~~second~~ third image;

calculating the position and posture of the outside shape of the back surface of the DUT picked up by the moving device from the ~~third~~ second image; and

calculating the position and posture of the input/output terminals of the DUT picked up by the moving device based on the results of these calculations.